Alliance for Telecommunications
Industry Solutions

*Problem Solvers to the
Telecommunications Industry*

March 20, 2002

VIA ELECTRONIC FILING

William F. Caton
Acting Secretary
Office of the Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC  20554

>    Re:    ***Ex Parte* Presentation in CC Docket No. 94-102**
>    Revision of the Commission's Rules to Ensure
>    Compatibility with Enhanced 911 Emergency Calling Systems

Dear Mr. Caton:

 On March 12, 2002, representatives from the TTY Technical Standards Implementation ("TTSI") Incubator Program, sponsored by the Alliance for Telecommunications Industry Solutions ("ATIS"), met with representatives from the Federal Communications Commission ("FCC" or "Commission") to discuss issues regarding digital wireless TTY call completion to Public Safety Answering Points ("PSAP").

In attendance, representing the Commission, were Kris Monteith, Chief, Policy Division, WTB; Mindy Littell, Attorney, Policy Division, WTB; Patrick Forster, Senior Engineer, Policy Division, WTB; Greg Hlibok, Attorney Advisor, Disabilities Rights Office Division, CIB; and Jerome Stanshine, Telecommunications Systems Specialist, Network Technology Division, OET (via conference call).  The individuals representing the TTSI were Lori Buerger, Director, External Affairs, AT&T Wireless; Karen Gulick, Partner, Harris, Wiltshire & Grannis, LLP, on behalf of AT&T Wireless; Ben Almond, Vice President, Federal Regulatory Affairs, Cingular Wireless; Ken Evans, Senior Manager, Product Realization, Cingular Wireless; Susan Palmer, Associate Director, Federal Regulatory, Cingular Wireless; Andrea Williams, Assistant General Counsel, CTIA; Steven Coston, Technical Manager, Regulatory Services, Sony Ericsson; Judy Harkins, TAP Director, Gallaudet University; Alfred Lucas, Vice President and Director, Office of Access Excellence, Motorola; John Melcher, First Vice President, NENA; Richard Taylor, Second Vice President, NENA; Scott Freiermuth, Attorney, Sprint PCS;

Ed Hall, Vice President – Technology Development, ATIS; Jim Turner,
Technical Coordinator – IITC, ATIS; and Megan Campbell, General Counsel, ATIS.

The purpose of the meeting was to: (i) provide background information on the industry initiated testing activities under the auspices of the TTSI Incubator Program; (ii) notify the Commission of the issues encountered during wireless TTY testing with PSAPs; (iii) explain the efforts currently underway to address the issues identified during testing and, (iv) discuss the next steps given the June 30, 2002 mandate for wireless service providers to provide TTY capability with digital handsets including the ability to transmit 911 calls using TTY devices. The discussion was consistent with the attached presentation and supporting documents, which were provided to all participants at the meeting. However, further information is included in the next few paragraphs reflecting highlights of the discussion points and, in some cases, items that were not reflected in the written materials.

The wireless TTY/PSAP issue was discovered during first office application (FOA) testing over digital wireless networks where Total Character Error Rates (TCER) of greater than one percent (1%) were recorded while conducting network interoperability testing with a PSAP. It was mentioned that this is a latent problem capable of causing errors on the wireline side as well, but only identified as the result of the exhaustive wireless TTY testing. At the time of the *ex parte* meeting, the TTSI had tested with ten (10) PSAPs. Three (3) of the PSAP TTY vendors utilized by those PSAPs had passed with a one percent (1%) or lower TCER. The failure rate ranged from four percent (4%) to thirty-five percent (35%) TCER. (See attached presentation for details.) Emphasis was placed on the fact that there are over 7000 PSAPs deployed with the potential for 7000 different configurations of TTY equipment and, further, that some of those PSAPs utilize equipment from vendors that have gone out of business. TTSI representatives explained that part of the problem, and the lack of knowledge regarding its magnitude, is due to the different configurations of PSAP equipment and the various software used at the PSAPs. This, in turn, is due to the absence of a common specification or standard for consumer and PSAP TTY equipment.

Attempting to better understand the scope of the problem, the TTSI representatives informed the Commission staff that the development of a standard test process for PSAPs and PSAP TTY vendors is currently underway. The goal is to develop a minimum performance validation tool, based on TIA/EIA 840 specifications (Minimum Performance Standards for Text Telephone Signal Detector and Text Telephone Signal Regenerator), to address all wireless technologies and make that tool available for web site dial-in use by PSAPs and PSAP TTY vendors. In order to ensure compatibility and interoperability, a registry would be established for PSAP vendors to list equipment meeting the set threshold of a TCER of one percent (1%) or less. While all TTSI representatives strongly endorsed such testing, it was noted that communication to and cooperation of the PSAPs and PSAP TTY vendors are essential for resolution of the identified problem. In this context, the TTSI representatives requested assistance from the Commission in encouraging the appropriate participation through the available means.

Notwithstanding the problem identified and the continuing efforts to resolve it, the TTSI representatives made it clear that the group was recommending that service providers launch a general consumer oriented TTY capability over digital wireless networks on June 30, 2002. It was explained that the launch would provide several other benefits to TTY users. However, the recommendation was premised on the proactive education of TTY users and consumers in general regarding the potential for errors rendering TTY messages unintelligible at the PSAP. It was strongly recommended that the Commission issue a Public Notice encouraging TTY users and consumers to consider other means of communications for emergency calls, including Telecommunications Relay Service (TRS), analog cellular, and landline telecommunications.

As efforts continue to resolve the wireless TTY PSAP issues, the TTSI Incubator Program and ATIS have committed to keeping the Commission apprised. Should the Commission require any further information regarding the issues discussed during the March 12, 2002 *ex parte* meeting or the status of activities going forward, please contact Ed Hall at (202) 434-8836 or me at (202) 434-8847.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, one copy of this letter is being filed electronically for inclusion in the public record of the above-referenced proceeding.

Sincerely,


*Megan L. Campbell*
General Counsel

Attachments

cc:     Kris Monteith, Chief, Policy Division, WTB (kmonteit@fcc.gov)
        Mindy Littell, Attorney, Policy Division, WTB (mlittell@fcc.gov)
        Patrick Forster, Senior Engineer, Policy Division, WTB (pforster@fcc.gov)
        Greg Hlibok, Attorney Advisor, Disabilities Rights Office Division, CIB (ghlibok@fcc.gov)
        Jerome Stanshine, Telecommunications Systems Specialist, Network Technology Division,
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Ed Hall, Vice President – Technology Development, ATIS (ehall@atis.org)
Jim Turner, Technical Coordinator – IITC, ATIS (jturner@atis.org)

# Federal Communications Commission
Ex Parte Meeting
March 12, 1:00 PM to 2:00 PM
445 12<sup>th</sup> St., S.W.
Washington. DC 20554

Topic: Wireless TTY Call Completion to a PSAP

Industry Representatives:

1. Megan Campbell,          ATIS
2. Ed Hall,                 ATIS
3. Jim Turner               ATIS
4. Lori Buerger             AWS
5. Karen Gulick             AWS
6. Ben Almond               Cingular Wireless
7. Ken Evans                Cingular Wireless
8. Susan Palmer             Cingular Wireless
9. Andrea Williams          CTIA
10. Steve Coston            Ericsson
11. Judy Harkins            Gallaudet Univ.
12. Al Lucas                Motorola
13. John Melcher            NENA
14. Richard Taylor          NENA
15. Scott Freiermuth        Sprint PCS

# TTY Call Completion to a PSAP

# Prepared for FCC Meeting

**March 12, 2002**
**by**

**ATIS**
**TTY Technical Standards Implementation (TTSI)**

**Contact:**
**Ed Hall**
**Ehall@atis.org**
**202.628.6380**

**ATIS**

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# Background: TTY Forum

- TTY Forum Established in 1997 by CTIA

- Now sponsored by ATIS

  http://www.atis.org/atis/tty/ttyforum.htm

- **Mission**:Enable a TTY user to access digital wireless networks including calls to  9-1-1 (PSAP)

- Members: Open Industry Forum-Open to all

    FCC; Consumer Organizations; Public Safety; TTY Manufacturers; Handset Manufacturers; Infrastructure Manufacturers; Service Providers

**ATIS**

# Background: TTY Forum

Accomplishments to date:
- Over 70 Agreements
  - (e.g., Solve for 45.45 baudot/not E-Protocols)
- "User Requirements"
- "TTY Mode Switch" Design Considerations
- Impetus for a suite of Technical Standards:
  - TDMA  • CDMA
  - GSM    • 2.5-mm Jack
- Glossary of Terms
- Complex Technical Issues

*ATIS*

# TTY Forum: Current Status

- ANSI-41 technologies (TDMA, CDMA) have standardized Lucent's, "No Gain Solution"
- GSM based carriers have standardized Ericsson's Cellular TTY Modem (CTM) solution
- Handsets are being manufactured and infrastructure is being deployed
- **Industry is working in unison, sharing technology issues and solutions.**
- **Cooperation**
- **Due Diligence on a complex technical issue**!!

*ATIS*

## TTY Technical Standard Implementation (TTSI)

- Technical Complexity
  - TTY Code Development
    - Releases, Validation
  - Product Development
    - Simulations, Test failures
  - System Integration
    - Assumptions
- TTY Forum (non-technical)
- Ericsson sparked the establishment of TTSI

## TTSI

- Issues and Resolutions
  - Standardized TTY Test Process: Gallaudet SW
  - White-paper:
    - Dynamic Echo Control, Output levels, VCO/HCO: TSB-121
  - Interoperability between Wireless and PSAPs
- Final Test Stages & Interoperability
  - Critical Test failure analysis
    - Standards issue, equipment and configuration, test coord.
- Issues being escalated and actions assigned

# The Wireless TTY PSAP Issue

- PSAP Interoperability
    - Testing has uncovered unacceptable TCER (greater than 1%) between Wireless TTY and some PSAPs rendering conversations unintelligible
        -37 PSAP/CAD vendors identified
        -10 PSAP/CAD locations tested to date
        -41 failures out of 82 test cases
        -3 PSAP vendors pass

# The Wireless TTY PSAP Issue

High Character Error Rates
    - Until PSAP equipment is standardized and ADA compliant, some digital wireless TTY users are at risk of not being able to communicate with a PSAP in an emergency
    - This raises concerns that some PSAPs may not be able to handle wireline, as well as, wireless TTY calls

# PSAP Problem

- Over 7,000 PSAPs deployed nationwide subject to varying state and local oversight. NENA coordinates, but has no regulatory authority
- There is no commonly accepted TTY specification, certification process, or requirements for PSAPs and other call centers
- Some vendors have exited the PSAP CPE business, but their products are still in network
- There are 9 PSAP and wireless technical standards that must work together for TTY access

# PSAP / Wireless Standards

- NENA -04-001 PN 1663 - PSAP Standard
- TIA/EIA 825 - FSK Modem - PSAP / TTY Vendor's guide
- TIA/EIA 840 A - Minimum performance standards for Text Telephone Signal Detector & Regenerator - Wireless TTY
- IS 823 B - TDMA TTY Extension
- TIA IS 127-3 EVRC CDMA TTY Extension
- TIA IS 733-2 13K CDMA TTY Extension
- TIA IS 889 CDMA TTY/TDD Minimum  Performance Standard
- T1-718 PCS 1900 CTM Bit Exact Code
- ITU -T  V.18 Text Telephone Telephony Automoding and modem

All Standards *MUST* inter-operate with each other

# TTSI Efforts to Resolve

- Wireless Network modification to maximize interoperability with existing PSAPs
- Availability of a minimum performance validation tool based on TIA/EIA 840 to define the scope of the PSAP interoperability issue (potential to be modified for use by wireline)
  - PSAP/PSAP vendors will be encouraged to dial-in and record this file using their baudot method
  - PSAP/Vendors will mail resultant text file to ATIS for scoring.
- ATIS/NENA will keep a register of PSAPs tested, passed, and failed to define scope of problem

# TTY Call to PSAP

**NENA plays a critical Role:**

- Is a member of the TTY Forum
- Has been engaged on this issue
- Has volunteered to coordinate testing with PSAP TTY suites
- Industry currently working with NENA to resolve TTY/PSAP issue
  - NENA has appointed an Official Representative to assist TTSI

# Mobile TTY – Next Steps

- TTSI recommends launch on 6/30/02
  - TTY users will benefit
    - Wireless access to digital phones, friends/family, TRS & some PSAPs
    - Provides easy access to other digital services
      - SMS, Wireless Web, Messaging

- Continue TTY Forum/TTSI for Resolution
  - NENA, PSAP CPE & TTY Manufacturers' participation essential

# Mobile TTY – Next Steps

- TTSI
  - Work with NENA to identify the scope of the problem by 9/30/02
  - Develop a standardized acceptance test
    - Utilize current TTSI process
    - Registry established to track progress

- Mandatory Testing & Compliance
  - Carriers, Wireless Infrastructure & Handset, TTY Terminals & PSAPs all testing to the standard acceptance test

# Mobile TTY – Next Steps

- FCC Action regarding Mandate Issues

  - Public Notice
  - Need to address lack of TTY specifications
  - Consider ADA implications of PSAP readiness

- Notification to Consumers

**ATIS**
Alliance for Telecommunications
Industry Solutions

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# Comments and Questions

**ATIS**
Alliance for Telecommunications
Industry Solutions

# Report 34 TCER By PSAP Device

**Destination Device**     100

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Landline to PSAP | 0 | 7.4 |
| Landline to PSAP | 0.23 | 1.06 |
| Landline to PSAP | 0 | 1.04 |
| Landline to PSAP | 7.4 | 0 |
| Landline to PSAP | 0.9 | 0.09 |
| Landline to PSAP | 0 | 0 |
| Mobile to PSAP | 7 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 9.3 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 7.2 | 0 |
| Mobile to PSAP | 0 | 5.5 |
| Mobile to PSAP | 0 | 6.7 |
| Mobile to PSAP | 0 | 2.7 |
| Mobile to PSAP | 3.7 | 0 |

**Summary for 'Destination Device Under Test' =  100 (15 detail records)**

| | | |
|---|---|---|
| Overall **Avg** | **2.38** | **1.63** |
| **(Landline Avg <6 Records>** | **1.42** | **1.59)** |
| **(Mobile Avg <9 Records>** | **1.81** | **1.65)** |

**Destination Device**  101

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Landline to PSAP | 0.08 | 0 |
| Landline to PSAP | 1.9 | 0 |
| Landline to PSAP | 0 | 0 |
| Mobile to PSAP | 32.7 | 2.2 |
| Mobile to PSAP | 15.53 | 18.03 |
| Mobile to PSAP | 24 | 0 |
| Mobile to PSAP | 8.19 | 0.83 |
| Mobile to PSAP | 27.7 | 0 |
| Mobile to PSAP | 25.8 | 0 |
| Mobile to PSAP | 18.9 | 0 |

**Summary for 'Destination Device Under Test' =  101 (10 detail records)**

| | | |
|---|---|---|
| Overall **Avg** | **15.48** | **2.106** |
| **(Land Line Avg <3 Records>** | **0.66** | **0.0)** |
| **(Mobile Avg <7 Records>** | **21.83** | **3.0)** |


**Destination Device**  122

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 11.11 | 0 |
| Mobile to PSAP | 10.03 | 0 |
| Mobile to PSAP | 3.2 | 0 |

**Summary for 'Destination Device Under Test' =  122 (3 detail records)**

| | | |
|---|---|---|
| **Avg** | **8.11** | **0** |

**Destination Device**  123

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 1.51 | 0.1 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 3.03 | 0.8 |

**Summary for 'Destination Device Under Test' =  123 (3 detail records)**
**Avg**                                                                                    **1.51**                        **0.3**


**Destination Device**  124

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 0 | 0.62 |

**Summary for 'Destination Device Under Test' =  124 (1 detail record)**
**Avg**                                                                                    **0**                        **0.62**


**Destination Device**  125

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 6.34 | 2.9 |
| Mobile to PSAP | 6.66 | 0.93 |
| Mobile to PSAP | 6.66 | 0 |

**Summary for 'Destination Device Under Test' =  125 (3 detail records)**
**Avg**                                                                                    **6.55**                        **1.28**

**Destination Device** 126

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 0 | 7.67 |
| Mobile to PSAP | 0 | 6.66 |
| Mobile to PSAP | 0 | 7.5 |

**Summary for 'Destination Device Under Test' =  126 (3 detail records)**

| **Avg** | **0** | **7.28** |
|---|---|---|

**Destination Device**  127

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 0 | 0.69 |
| Mobile to PSAP | 0 | 1.38 |
| Mobile to PSAP | 7.28 | 1.26 |

**Summary for 'Destination Device Under Test' =  127 (3 detail records)**

| **Avg** | **2.43** | **1.11** |
|---|---|---|

**Destination Device** 21

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Landline to PSAP | 2.66 | 0 |
| Landline to PSAP | 2.66 | 1.33 |
| Landline to PSAP | 8 | 1.3 |
| Landline to PSAP | 0 | 0 |
| Landline to PSAP | 0 | 0 |
| Landline to PSAP | 2.6 | 0 |
| Landline to PSAP | 2.6 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 70(phone Issue) | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 2.58 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |

| | | |
|---|---|---|
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 40(Phone Issue) | 2 |
| Mobile to PSAP | 70(Phone Issue) | 2 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 1.27 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |

**Summary for 'Destination Device Under Test' = 21 (36 detail records)**

| | | |
|---|---|---|
| Overall **Avg** | **5.62** | **0.184** |
| **(Avg Landline <7 detail records>** | **2.64** | **0.37)** |
| **(Avg Mobile only <29 detail Records>** | **6.33** | **0.13)** |
| **(Avg Mobile with out defective phone <26 DR>** | **0.14** | **0.0)** |

**Destination Device** 99

| Test Configuration | Uplink Error Rate | Downlink Error Rate |
|---|---|---|
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |
| Mobile to PSAP | 0 | 0 |

**Summary for 'Destination Device Under Test' =  99 (4 detail records)**
**Avg**                                                    **0**                              **0**

# PUBLIC NOTICE

**Federal Communications Commission**
**445 12th St., S.W.**
**Washington, D.C. 20554**

PROPOSED DRAFT

**DA 02-XXX**

Released: _____, 2002

## WIRELESS TELECOMMUNICATIONS BUREAU REMINDS ALL COMMERCIAL MOBILE RADIO SEVICE PROVIDERS OF THEIR OBLIGATION TO BEGIN TRANSMITTING 911 EMERGENCY CALLS FROM INDIVIDUALS USING TEXT TELEPHONES (TTY) BY JUNE 30, 2002

By this Public Notice, the Wireless Telecommunications Bureau reminds all commercial mobile radio service (CMRS) providers of their obligation to provide access to 911 emergency services over their digital networks for individuals who use text telephones (TTY or TDD). Text telephones, which are typewriter style devices communicating alphanumeric information over telecommunications networks, allow individuals with speech or hearing disabilities to communicate over the public switched telecommunications network. TTYs have generally been compatible with wireline telecommunications and cellular analog networks. The June 30, 2002 deadline for CMRS providers will additionally require that digital mobile networks are capable of transmitting communications from TTY devices to 911 emergency services (also known as public safety answering points, or PSAPS).

Covered carriers are referred to Commission rule 20.18(c), 47 C.F.R. § 20.18(c), which states that carriers "must be capable of transmitting 911 calls from individuals with speech or hearing disabilities through means other than mobile radio handsets, e.g., through the use of Text Telephone Devices (TTY)." Accordingly, carriers must have completed necessary network upgrades and must begin making digital TTY-compatible handsets available to the public by June 30, 2002.

The Commission has been advised that in some circumstances compatability issues exist between TTY equipment, rendering communication inaccurate. During this transition as the industry and PSAPs work together making this technology more ubiquitous, the Commission advises consumers that digital-TTY compatibility by their service providers may not alone be sufficient to ensure complete and accurate communications with some PSAPS. Therefore, during this transition period, consumers are encouraged to consider other means of communications for emergency calls, including Telecommunications Relay Service (TRS), analog cellular, and landline telecommunications.

Draft Document

For further information contact _____ at (202) 418-XXXX, [email], of the Wireless Telecommunications Bureau, or _____ at (202) 418-XXXX, [email], of the Disabilities Rights Office, TTY Number: (202) 418-XXXX.